OpenCape Corporation Business Plan

1 May 2007

Preface

Disclaimer

The OpenCape Business Plan is intended to provide general information about the OpenCape project. It is should not be used to make legal, accounting, or investment decisions.

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Executive Summary

As the interstate highway facilitated the exchange of goods and services in the 20th Century, the telecommunications infrastructure will facilitate the exchange of information in the 21st Century. It is the critical element of infrastructure for economic development.

Cape Cod and the Southeastern Massachusetts Region have inadequate communications infrastructure. The communications deficiencies are in backhaul transport and "last mile" access options.

The issue goes beyond economic development. The Cape, Islands and South Coast are the most vulnerable region in Massachusetts to natural disaster. A hurricane will eventually strike the region. Its proximity to the Plymouth nuclear power plant adds to this vulnerability. The region does not have the robust and redundant system of communications it will need in the event of a natural or man-made disaster.

OpenCape's purpose is to fulfill the need for a regional communications network to enhance education, research, and economic development, AND provide for an emergency communications network in times of crisis.

OpenCape Corporation will create and operate a regional wholesale digital backhaul communications network commonly referred to as the TRANSPORT network. This network will provide reliable, redundant, and secure backhaul communications for public and commercial access networks on Cape Cod and the Islands of Martha's Vineyard and Nantucket. The network will support open access and promote competition in all telecommunications services.

The OpenCape Corporation will provide priority access to designated Regional and Primary emergency evacuation centers and community emergency operations centers.

OpenCape Corporation will generate revenues adequate to operate, maintain, and upgrade the transport network by selling access to the transport network to access entities. Access entities will take many shapes and forms. None of these entities could create or operate the necessary backhaul to meet their individual needs. By creating an open wholesale transport network that each can use, each can thrive.

The estimated implementation cost of OpenCape is $5M. The annual operating costs are estimated at $500K. Approximately $1.2M in revenues can be generated to operate and sustain OpenCape.

I. Background

The OpenCape initiative began as an effort by Cape Cod Community College (CCCC) to create more and cheaper bandwidth options for its facilities. The College has inadequate bandwidth to meet its present and future needs. Very few options for increasing bandwidth exist. Those that are available are too expensive or lack adequate throughput. The College and the Cape Cod Technology Council (CCTC) formed a partnership in 2006 to pursue common interests, to include improving communications infrastructure on the Cape. As the two organizations researched the issue of limited regional bandwidth options, additional interested parties were identified, such as the Woods Hole Oceanographic Institution and the University of Massachusetts at Dartmouth.

Analysis revealed a regional network is needed for both day-to-day operations and emergencies. In addition, it is clear both public service and commercial service are needed. A concept to address this need was developed and given the name OpenCape.

With a firm conceptual basis in hand, Cape Cod Community College and the Cape Cod Technology Council organized a summit of Cape and Island leaders to discuss and conduct preliminary planning for a shared and survivable communications network. The OpenCape Summit was held at CCCC on June 22, 2006.

The OpenCape Summit brought together over 100 leaders from the public and private sectors to create a common understanding of wireless and broadband technologies; to discuss the creation of a partnership organization to administer OpenCape; to develop an outline description of the core components, technologies, geographic placement, and capabilities of a survivable telecommunications network; and to identify responsibilities and timelines of action to further the OpenCape concept.

A Steering Committee was formed in August, 2006, approved a charter, and elected officers. The committee was formed to ensure OpenCape was directed and developed by a broad-based coalition of interested parties rather than a single organization initiative. The Steering Committee was a reasonably sized group of eleven from across the geographic region that is representative of the primary user groups (i.e. education, economic development, research, and public safety). The Steering Committee provided direction and decision-making until the non-profit OpenCape Corporation was formed in March, 2007.

II. Business Description

2.1 Purpose

OpenCape's purpose is to fulfill the need for a regional communications network to enhance education, research,healthcare, and economic development, AND provide for an emergency communications network in times of crisis.

2.2 Context

Human social and economic development is enabled by transportation and its supporting infrastructure. Infrastructure has developed over time as transportation technologies were invented and proliferated to support the exchange of ideas, information, goods and services. From cart paths and roads, to rivers and canals, to rail and aviation, the steady march of innovation has determined the success or waning of communities.

As the interstate highway facilitated the exchange of goods and services in the 20th Century, the telecommunications infrastructure will facilitate the exchange of information in the 21st Century. It is the critical element of infrastructure for economic development.

OpenCape is focused on the Cape and Islands, but it is part of a larger effort to improve the infrastructure of the Southeastern Massachusetts Region.

2.3 The Issue

Cape Cod, the Islands, and the Southeastern Massachusetts Region have inadequate communications infrastructure. The communications deficiencies are in both backhaul transport and "last mile" access options.

The traditional commercial providers have not developed the capacity to serve the entire region, nor have they introduced more modern services such as fiber optics. They do not see the return to justify the cost of investment in the region. The result is old technology, limited options, inadequate capacity, lack of redundancy, and unnecessarily high cost to residents and businesses of the region.

The impact on the region is significant. Many homes and businesses cannot gain access to the Internet because they are beyond the service range for incumbent traditional providers; school systems lack access to the rich resources of Internet 2 and video content because the lack capacity and access; enterprise institutions

throttle protocols and lease server space off-Cape because they have inadequate down and up bandwidth.

The Cape, Islands and South Coast are the most vulnerable region in Massachusetts to natural disaster. A hurricane will eventually strike the region. Its proximity to the Plymouth nuclear power plant adds to its vulnerability. The region does not have the robust and redundant system of communications it will need in the event of a natural or man-made disaster. In fact, the outer-Cape has suffered complete loss of communications (including 911 service) because there is no redundancy to existing systems. The impact of a natural disaster on Cape economic activity will be severe. The lack of adequate infrastructure will negatively impact the ability of businesses to recover from a disaster.

2.4 The Solution

OpenCape Corporation will create and operate a regional wholesale digital backhaul communications network commonly referred to as the TRANSPORT network. This network will provide reliable, redundant, and secure backhaul communications for public and commercial access networks on Cape Cod and the Islands of Martha's Vineyard and Nantucket. The network will support open access and promote competition. It will enable all cities and towns on Cape Cod and the Islands to have broadband access.

The OpenCape Corporation will provide priority access during natural or man-made disasters to regional and primary emergency evacuation centers identified in the Cape Cod Emergency Preparedness Handbook, 2004 through direct bridge communications or indirectly through a town or school district operated wide area network (WAN).

The graphic below provides an overlay of the service area over the Southeaster Massachusetts region.

2.5 Business Model

OpenCape Corporation will operate as a wholesale backhaul reseller. OpenCape Corporation will generate revenues adequate to operate, maintain, and upgrade the transport network by selling access to the transport network to "access entities". An access entity is any entity that accesses the transport network.

Access entities will take many shapes and forms. For example,

- Consortia such as the Cape Libraries Automated Materials Sharing (CLAMS) library network may link its 35 member WAN using the OpenCape transport network and provide Internet access to its members.
- School departments may connect to the OpenCape transport network for access to Internet 2, possibly using the Cape Cod Collaborative as a clearing house for negotiating access to OpenCape and single Erate filing. It is possible that if schools partner with Cape Cod Collaborative a single Erate filing could be made that would get a regional 50% reimbursement for Internet access for all districts. The ACCEPT Collaborative in the western suburbs of Boston uses this model.
- Enterprise networks such as Woods Hole Oceanographic Institution may connect to the OpenCape transport network for backup Internet access.

- Cape Cod Community College may connect to the OpenCape transport network as a primary up and down bandwidth resource with further connection to the state MITI network and/or a private ISP.
- Commercial ISPs may establish last mile service to homes and businesses. They will connect to the OpenCape transport network for transport to a further routing point to their ISP network. These ISPs can offer a full array of service across the Cape and Islands to businesses and residents.
- Municipalities may provide service to residents directly by forming their own municipal wireless access network. They will connect to the OpenCape transport network for transport to a further routing point to their ISP.
- Community networks such as Unwired Villages may provide unrestricted access in common use areas across the Cape. These entities could consolidate using the OpenCape transport network for further transport to an ISP.

These are but a few examples of the entity forms that may take shape and access the OpenCape transport network. None of these entities could create or operate the necessary backhaul to meet their individual needs because of the cost. By creating an open wholesale transport network that each can use, each can thrive. This model reduces the administrative and operational overhead costs for all and ensures a competitive marketplace for consumers.

2.6 Principles

OpenCape has adopted principles that form the basis of its approach. The Principles will guide the development of the OpenCape business plan:

Limited Role

OpenCape Corporation will remain at the wholesale transport or backhaul level of the network and the interchanges that access it.

Open Access

OpenCape will not discriminate against providers. The system will be open to the variety of public and commercial providers that can meet technical standards and pay access fees.

Flexible

OpenCape is initially focused on the creation of a wireless transport network; however, it does not confine itself to a single technology. It is easily upgradeable and scalable. It will adopt and deploy the best technologies available to support its need for transport, to include the lease and installation of fiber-optics.

Reliability

OpenCape commits itself to high availability with automatic alternate route switching when failures occur. In addition, the transport network will be certified to survive hurricane force winds and its equipment will be connected to backup generator power and UPSs. There will be automatic monitoring of each link.

Full Access

OpenCape commits itself to providing service to all communities and segments of communities.

Reduced Cost and Reinvestment

OpenCape will use revenues generated in excess of operating and maintenance costs to reduce the costs to public access entities, and improve capabilities and capacity.

2.7 Network Description

The Network consists of two parts – the radio network and the switching/routing network. Expected throughput is modeled at 100-250+Mbps and availability is modeled at 99.999%.

The radio network will have two distinct parallel physical networks to segregate public from commercial traffic, double the available bandwidth, and provide for redundancy in an emergency should one of the antennas or radios be damaged.

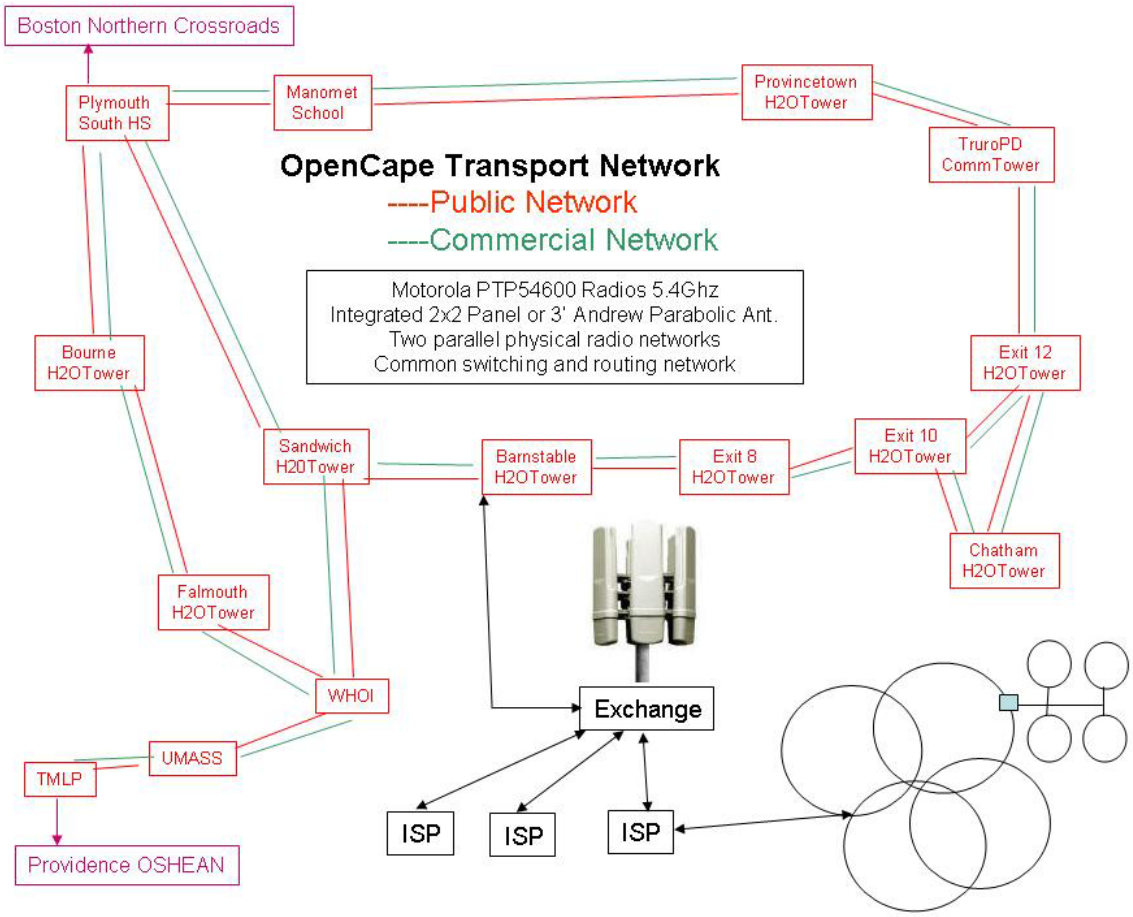
The switching and routing network has the capacity to logically segregate the public and commercial traffic. Therefore, there will be one physical switching and routing network and two logical switching and routing networks. VLANs will be used to logically segregate traffic to a much lower level to isolate and secure the data communications of individual access entities.

Each hub of the transport network (such as a water tower) will also act as an interchange for accessing the transport network. Every effort will be made to minimize the number of radios and antennas placed on water towers or large communications towers. It is costly and difficult to conduct repairs and maintenance on these structures. Wherever possible the interchange will be offloaded from the tower to a more accessible facility such as a municipal or school building nearby. The precise manner and configuration of this model will be different at each site. A point to point system will likely be used to provide service to all of the priority service emergency facilities. A point to multi-point system is preferred for commercial access entities so that one antenna structure can act as an interchange for many access entities.

OpenCape is not confined to wireless technology alone. Where it is appropriate OpenCape will use other technologies that are now available, such as the fiber-optic network of the Taunton Municipal Light and Power Company for transport, or the

Sandwich Municipal fiber-optic network to deliver bandwidth to emergency shelters within the town from a single wireless access bridge. OpenCape will also look to the future to gain access to fiber that might be laid along state owned rail and highway rights of way. For example, the rail rights of way that run from Taunton to Fall River, New Bedford, and Barnstable have been recommended to the Governor's Transition Working Groups as ideal for installation of fiber.

The network topology will resemble the graphics below for the Public and Commercial Networks:



2.8 Market

The market for public and commercial transport capacity is significant. There is a present need for transport capacity that is not being met on Cape Cod. OpenCape can directly and immediately tap the public access market need for entities such as those listed in section 1.4. There is also a significant underserved commercial access market that has the potential to create greater demand than the public access market.

Wireless Internet Service Providers (ISP) could service the underserved commercial market. Those ISPs would require transport within and off of the Cape. OpenCape's commercial transport network could service that market.

Before OpenCape constructs its commercial transport network it must have confidence that the retail market exists to support the entry of ISPs that will require transport services from OpenCape. We are confident that the business, residential, and mobility retail user market is ripe for service and that those ISPs could service that market would chose OpenCape for their transport needs.

The profit and non-profit business sectors require additional bandwidth options. There were over 31,000 businesses in Barnstable County in 2002 generating $11.5B in receipts according to the U.S. Census Bureau. Nearly 8,000 of these businesses had paid employees. The average company had ten employees. Many of these businesses have few or no options for broadband access. Many pay exceedingly high costs for the bandwidth they currently use and want more options. Some have mobile workers who require broadband access as they travel the Cape and currently have no means by which to obtain that service. We believe there is a significant business market for retail broadband access that commercial ISPs will wish to penetrate.

There is also a significantly underserved residential market. Cape Cod consists of fifteen towns in Barnstable County totaling 396 square miles. The fifteen towns contain approximately 60 villages and other distinct community identities. The year round population is approximately 230,000. The population increases substantially when second home owners and vacationers arrive in the summer.

There are nearly 155,000 houses on the Cape. There are approximately 100,000 households. Approximately 75% of the households are in owner occupied housing. There is a large second home and vacation rental housing stock of approximately 50,000 units.

Housing density is approximately 390 housing units per square mile. Barnstable County ranks sixth of fourteen counties in Massachusetts for housing density and number three in housing units added per square mile between 1990-2000. Build-out is estimated at approximately 275,000 year round residents and 190,000 houses.

The median age on Cape Cod was 44.6 years in the 2000 census. Nearly 23% of the population is 65 or over, reflecting the retirement population on Cape. There is also a high percentage (27%) in the 45-64 age group. The median household income was $46,218 in 2004. There is a trend toward older, second home, high income professionals and retirees.

In addition to the year round resident and business market there is a unique "partial year" market for wireless access that will likely pay higher fees for short term access. This includes the one or two week vacationer renting a cottage and the second home owner who lives on the Cape most or all of the summer and partially in the shoulder months.

2.9 Sustainability

OpenCape Corporation must be sustainable. The business model must and will generate adequate revenue to ensure OpenCape is self sustaining in terms of operation, maintenance, and upgrades of technology.

Public Access Network. Initial analysis of the costs to operate, maintain, and sustain the OpenCape public access transport network indicate approximately $300,000 will be needed annually. Analysis of the public access entity market indicates adequate revenue can be generated to meet this need. In addition, grant requests for the build out of the public access transport network will include funding for these costs for a minimum of the first year, but preferably for the first three years.

Beneficiaries of the emergency communications capabilities of OpenCape must also contribute to sustaining the capability in order to ensure its availability in times of crisis. The Massachusetts Emergency Management Agency (MEMA), counties, and Red Cross should be assessed an annual fee to support the capability.

Analysis of the revenue that can be generated by the public access network alone indicates it can sustain the public access network. It must be self sustaining until the commercial access network is functional and develops an adequate market share to generate sufficient revenue to sustain both the public and commercial access networks.

Commercial Access Network. The implementation of the commercial access network will add complexity and cost to the management, operation, maintenance, and sustainability of the OpenCape transport network. It is estimated the commercial access network implementation will cause OpenCape to incur an additional $200,000 in operating and maintenance costs. Successful revenue generation will largely rely on successful commercial ISPs serving the business and residential markets.

> Business Market. The profit and non-profit business sector require additional bandwidth options. If one assumes a 15% penetration of the 23,000 single proprietor businesses and a 30% penetration of the businesses with paid employees, with an average monthly billing of $75 the total revenue generated by commercial ISPs would be approximately $4.3M.

Residential Market. If the commercial ISPs have a 20% annual subscription rate from the 100,000 households on Cape Cod and charged $30 per month to these customers they would generate nearly $7.2M in revenue.

Seasonal Market. ISPs will also be able to penetrate the 50,000 second home and vacation rental market. Higher rates would be charged to subscribers for weekly or monthly periods during the summer vacation season. If a weekly rate of $25 were established for the vacation user and there were a 20% subscription rate for 10 weeks of the summer, the annual revenue to ISPs would be approximately $2.5M. The total of the two markets (year round and vacation) could yield nearly $9.7M to commercial ISPs annually.

If OpenCape revenues were based on 10% of the revenue generated by ISPs for business and residential service it would generate approximately $1.2M annually from commercial ISPs. When this level of revenue generation is achieved OpenCape will have adequate resources to maintain, operate, and sustain both the public access and commercial access transport networks at no cost to public access entities. In addition, there would be adequate resources available to expand and improve capabilities over time as new technologies become available.

2.10 Competition

There is limited competition for the transport services OpenCape will provide. The genesis of the project was a reaction to the lack of transport options. The limited T1 carrying capacity offered by Verizon or its resellers is inadequate in capacity and exceedingly costly. Institutions have used an amalgam of other methods to try and maximize their bandwidth capacity by leasing multiple T1s and Comcast business class modems to get as much capacity as possible. Additional techniques such as load balancing and packet shaping are employed to maximize the efficiency of traffic on networks. These techniques are helpful, but ultimately cannot provide the capacity that is needed, particularly for the delivery of data upstream.

Commercial access ISPs will have a significant market that is not serviced by the existing providers to areas that are beyond their area of service. For example, there are many areas, particularly on the outer Cape, that have no broadband service because they are too far from a central office for DSL service and the distance and complexity of bringing Comcast service is too great. The lack of density in some areas is considered prohibitive to both Comcast and Verizon. The complexity of mixed public and private communities often requires a level of coordination, cooperation, and agreement that is not forthcoming to permit delivery of service.

The commercial access ISPs that will consider entry into the last mile market space must also consider their competition for that service in areas that are within the service reach of other vendors such as Comcast, Verizon, and Verizon resellers.

2.11 Personnel

In its initial year OpenCape Corporation will use the services of a contracted Relationship Development Specialist and a Technical Specialist. The Relationship Development Specialist will in initial phases develop materials needed to communicate with a plethora of entities. These materials will include logos, brochures, stationary, media kits and other essential materials to communication. The Relationship Development Specialist will work with legal counsel to secure memorandums of understanding with all towns, school districts and other entities that will host OpenCape equipment, secure licensing or other such agreement with water district and other entities for rights to install antenna and radio equipment, build a portfolio for each town, complete the Business Plan, coordinate consultant activity, prepare full grant proposals with a contracted grant researcher, document the development of the project, prepare grant reports, and perform other coordinating and administrative duties.

The Technical Specialist will build a public asset inventory database of all public assets to include owner, address, photos, coordinates, coordinates, elevations, topographic, GIS, link modeling, electrical requirements and other pertinent information and record them electronically and in hard copy in the portfolio for each town, maintain files and database listings of all activities, contractors, contracts, purchasing, and other related materials, and work with the Relationship Development Specialist to complete all administrative, accounting, and reporting requirements.

In the longer term OpenCape Corporation is intent on remaining small. The Corporate Board and its officers will hire an administrator to implement its policy, develop and maintain relationships, and execute contracts. In addition, a part time administrative assistant and possibly a technician will be considered as the system develops. The intention of the Corporation is to outsource the monitoring and maintenance of the radio and switching networks.

III. Financial Data

3.1 Initial Phase - Grants

The OpenCape Corporation will pursue grants and donations initially to fund essential work necessary for full project grant requests. A great deal of research

and analysis, modeling and engineering are required to establish the technical boundaries of full implementation. Legal work to establish a corporation and grant research and preparation are necessary. In addition, a proof of concept connectivity must be created. The proof of concept connectivity will result in a wireless link from CCCC to the Internet via a series of intermediate points in Barnstable, Sandwich, Woods Hole, UMASS Dartmouth, and Taunton Municipal Light and Power.

The intended sources of funds to support the Initial Phase activities are listed below:

Cape Cod Economic Development Council		$ 50,000.00
Cape Cod Community College		$ 30,000.00
Woods Hole Oceanographic Institution		$ 30,000.00
University of Massachusetts at Dartmouth		$ 30,000.00
MTC JAII Regional Priority Grant		$ 150,000.00
MTC JAII Direct Consulting Support		$ 75,000.00
Sub-Total		$ 365,000.00

Commitments are in hand for the $365,000. Specific accomplishments projected for the use of these funds include:

3.1.1 Marketing Study to Determine Self-Sustainability. Marketing and competition are very important to the sustainability of OpenCape. The wholesale transport service OpenCape will provide is one market. It is further dependent on the potential market penetration of commercial access ISPs that will pay OpenCape for transport services. The study will show both the need that exists to justify granting of the full project and to attract ISP partners by showing opportunity. Nicholas J. Vantzelfde, a consultant to MTC will lead in the production of this critical analysis and report.

3.1.2 Existing Fiber Infrastructure. A comprehensive assessment will be performed to determine the existing fiber and wireless communications backhaul infrastructure in the Southeastern Massachusetts Region, to include Cape Cod and the Islands. Conventional wisdom tells us there are very few options for high speed transport in the SE Massachusetts region and that which does exist is not accessible or too expensive. The facts are needed to plan the current wireless transport infrastructure of OpenCape, but also to plan for the future. Fiber will eventually be needed. A report of existing and known planned fiber and wireless communications backhaul infrastructure in the Southeastern Massachusetts Region will be produced that identifies the location, ownership, technology, and capacity. The report will include all of the known major vendors, such as NSTAR, COMCAST, and VERIZON, as well as the less obvious MBTA, Mass Highway, and others unknown. Four 36" poster size, four 11x17, and 10 8.5x11 GIS poster plots of

identified infrastructure will be provided. A GIS file of the identified infrastructure will be provided on DVD.

3.1.3 Wireless Engineering Study. A complete wireless communications engineering study of the entire OpenCape implementation. The OpenCape Project Manager and Assistant Project Manager will refine the existing body of information regarding proposed link paths. Simultaneously, an RFP will be drafted and issued to vendors to conduct the wireless engineering study. The OpenCape Executive Committee will select a vendor to conduct the study. The study will review local, regional, and federal telecommunications regulations that apply. It will describe and detail the equipment and configuration, and provide modeled expectations of throughput and availability.

3.1.4 Network Topology Engineering Study. A complete network topology engineering study of the entire OpenCape implementation. The OpenCape Project Manager and Assistant Project Manager will refine the existing body of information regarding proposed link paths. Simultaneously, an RFP will be drafted and issued to vendors to conduct the network topology engineering study. The OpenCape Executive Committee will select a vendor to conduct the study. The study will describe and detail the equipment and configuration of the network.

3.1.5 Grant Applications for the full implementation. An expert grant researcher will be contracted to identify, assess, and prepare a broad array of grant applications that can support the full implementation of the OpenCape concept. The grant researcher will research and assess grants available from foundations, corporations, and government agencies (state and federal) that correspond to the needs of the OpenCape concept. The results of the preliminary search will be used to conduct a detailed analysis of grants deemed most likely to meet the needs of the full OpenCape concept requirements within an appropriate timeline. The grant researcher will prepare final grant application forms for submission to granting agencies and organizations.

3.1.6 Proof of Concept Completion. MTC will provide a portion of the funds needed to complete the proof of concept wireless connectivity from CCCC to the Internet via a series of intermediate points in Barnstable, Sandwich, Woods Hole, UMASS Dartmouth, and Taunton Municipal Light and Power. The proof of concept connectivity is essential to demonstrate the viability of the technology and the ability of the grantees to implement it. It will be an essential component of the full project grant request.

3.1.7 Request for proposal (RFP) for full implementation. A complete request for proposal (RFP) for the full OpenCape implementation will be drafted and approved by the OpenCape Corporation Board.

3.2 Full Project – Grants, Donations, and Earmarks

The OpenCape Corporation will pursue grants, donations and government earmarks for capital funding of the full implementation. The estimated cost of the complete project build out is approximately $3 million for the public access transport network and $2 million for the commercial access transport network. Full project grants will be sought from appropriate entities. The broad impact of the public access network makes grants from a broad range of agencies possible. Examples of the federal granting agencies that may be solicited include the Department of Education, Department of Homeland Security, National Science Foundation, Department of Agriculture, Department of Labor, and others. The commercial access network grant funding can be sought from economic development granting agencies and organizations such as the Department of Labor, Department of Commerce, Massachusetts Technology Collaborative, and others. A comprehensive search and analysis will be conducted of both government and private granting sources for full project implementation.

In addition to grants, federal and state earmarks must be considered. OpenCape is a grass roots effort to bring capabilities to an underserved region that are sorely needed for economic development and emergency preparedness. It is consistent with the stated goals of many elected representatives in the federal and state government. The Massachusetts federal legislative delegation has shown particular interest in the past in expanding broadband capabilities to underserved regions and recognizes the vulnerability of Southeastern Massachusetts to natural disaster. The newly elected Governor of Massachusetts has expressed strongly a desire to expand economic opportunity in Southeastern Massachusetts.

At least four of the Governor's Transition Working Groups (Economic Development, Creative Economy, Civic Engagement, and Technology) list the need for broadband access throughout the state. The Economic Development report calls on the Governor to "Establish a plan within twelve months that will increase broadband access and cellular coverage to rural or otherwise un-served areas within three years…". The Creative Economy Report calls on the Governor to "Provide broadband access in underserved regions (Berkshires and Cape and Islands)". The Civic Engagement report calls for broadband service to all libraries. The Technology Report goes into great detail in its call to "Establish universal broadband access" throughout the Commonwealth.

The estimated grant request amounts for the Public and Commercial Access Networks are below:

OpenCape Budget Estimate Public Access Network

EQUIPMENT

Total Equipment Radio/Antenna	$ 449,000.00	$ 270,000.00	$ 719,000.00
Total Network/Security Equipment	$ 162,000.00	$ 120,000.00	$ 282,000.00

Total Tower Equipment	$ 60,500.00	$ 100,000.00	$ 160,500.00
Total Emergency Generators	$ 120,000.00	$ 90,000.00	$ 210,000.00
TOTAL ALL EQUIPMENT TYPES	$ 791,500.00	$ 580,000.00	$ 1,371,500.00

LABOR

Total Labor	$ 377,000.00	$ 360,000.00	$ 737,000.00
Total Other Expenses	$ 837,000.00	$ 20,000.00	$ 857,000.00

Total Project Cost Estimate			$ 2,965,500.00
10% Flex			$ 296,550.00
Total Grant Request			$ 3,262,050.00

OpenCape Budget Estimate Commercial Access Network

EQUIPMENT

Total Equipment Radio/Antenna	$ 449,000.00	$ 156,000.00	$ 605,000.00
Total Network/Security Equipment	$ 162,000.00	$ 78,000.00	$ 240,000.00
Total Tower Equipment	$ -	$ -	$ -
Total Emergency Generators	$ -	$ 26,000.00	$ 26,000.00

TOTAL ALL EQUIPMENT TYPES	$ 611,000.00	$ 260,000.00	$ 871,000.00

LABOR

Total Labor	$ 212,500.00	$ 162,500.00	$ 375,000.00
Total Other Expenses	$ 547,000.00	$ 16,500.00	$ 563,500.00

Total Project Cost Estimate			$ 1,809,500.00
10% Flex			$ 180,950.00
Total Grant Request			$ 1,990,450.00

3.3 Accounting

OpenCape Corporation will contract with Cape Cod Community College for grant accounting. Cape Cod Community College will provide OpenCape Corporation with grant accounting services for a period of one year. All services will comply with the granting agency's accounting and reporting requirements. CCCC will confer with the granting agency as necessary to ensure a clear understanding of requirements and compliance.

Services to be provided by Cape Cod Community College include:

- Payment services to direct labor contractors to include 26 week payment cycle and 1099s.
- Purchase order processing
- Accounts payable services
- Monthly income statements
- Granting agency monthly billing submission

- Granting agency quarterly financial reports

IV. Supporting Documents

4.1 Legal Documents

The exact name of the Nonprofit Corporation: OPENCAPE CORPORATION
Entity Type: Nonprofit Corporation
Identification Number: 000946154
Date of Organization in Massachusetts: 03/06/2007
Current Fiscal Month / Day: 12 / 31
The location of its principal office in Massachusetts:
No. and Street: 2240 IYANNOUGH RD.
City or Town: WEST BARNSTABLE State: MA Zip: 02668-1599 Country: USA
The name and address of the Resident Agent:
Name: DAN GALLAGHER
No. and Street: 2240 IYANNOUGH RD.
C/O CAPE COD COMMUNITY COLLEGE
City or Town: WEST BARNSTABLE State: MA Zip: 02668-1599 Country: USA

4.2 Resumes of Board Members

Dan Gallagher, **President and Chairman**, is the Executive Director of Information Technology at Cape Cod Community College. Mr. Gallagher has over 20 years of experience providing vision, leadership, planning, and management of information technologies in analytical, information processing, strategic planning, and educational organizations. Mr. Gallagher is a former Naval Officer, having retired at the rank of Commander in 1999 after a distinguished career in Naval Intelligence. In 1999, Mr. Gallagher, a Microsoft Certified Systems Engineer (MCSE), became the Technology Manager of the Dover, Sherborn, and Dover-Sherborn Regional School Districts. He joined Cape Cod Community College in 2005. He has a BS from Boston State College and an MS from the Defense Intelligence College. He attended the Middlebury College Mandarin Chinese Language School.

Teresa Martin, Vice Chair, is CEO of the Cape Cod Technology Council. For the past 25 years she has been building business, community, and profitability at the intersection of technology, information, and communication. After an early stint as a business reporter, she worked for Fortune 400 publisher Knight-Ridder developing new products and business models driven by technological change,

launched several technology startups in Silicon Valley and was recruited to return to Massachusetts as COO of a software company. A published author, with three books to her name, a serial entrepreneur with several technology startups, a professor with a long history of blending technology and education, and a weekly columnist for the past decade. She holds a BS from Boston University and an EdM with a concentration in Interactive Technology from Harvard's Graduate School of Education.

Gary Delius, Treasurer,
Gary Delius, Treasurer, is MIS Director for the Town of Truro and also serves as the Chairman of the Finance Committee for the Town of Provincetown. A technologist by both education and experience, Mr. Delius has spent the last 27 years in hardware and software development for international companies, Multi-media production and public–access systems development and deployment for Federal, State and local governments and most recently, as IT Director and GIS technician and analyst for towns on the Outer Cape. Complimenting his high technology background early in his professional career Mr. Delius directed Emergency Medical Services for a 14 County governmental Co-operative located in the mountains of East Tennessee. In this role he oversaw the design, specification, purchase, installation and on-going operation of a multi-gigahertz, fully redundant microwave communication system located on mountain tops throughout the eastern part of Tennessee. Mr. Delius holds a BS in Business Administration and a MPH in planning and administration from the University of Tennessee.

Daniel Dray is the Administrator of the Cape Cod Economic Development Council (CCEDC), a fourteen-member advisory Council of Barnstable County reporting directly to the Board of Barnstable County Commissioners. Prior to working for the Cape Cod Economic Development Council, Daniel served as Executive Director of the Southwest Brooklyn Industrial Development Corporation and Director of Economic Development for the Greenpoint Manufacturing and Design Center (GMDC) in Greenpoint, Brooklyn. He also worked as a project manager with the New York City Business Improvement District (BID) Program. Daniel holds a BFA degree from Milton College (Wisconsin) and an MS degree from Cornell University.

Ellen Driscoll
Ellen Driscoll is currently Coordinator of Educational Technology and Instructional Media for Plymouth Public Schools. Prior to joining Plymouth Public Schools, Ellen was the Director of Educational Technology at Barnstable Public Schools. She is on the Executive Board of Directors for Massachusetts Computer Using Educators (MassCUE) and a Visiting Lecturer for Bridgewater State College. She holds a BA from UMASS Dartmouth, a M.Ed. from Lesley University in Educational Technology and a C.A.G.S. from Bridgewater State College in Educational Leadership.

Art Gaylord

Art Gaylord is the Director of Computer Information Services, Woods Hole Oceanographic Institution where he is responsible for all non-administrative computing, networking and telecommunications services. He coordinates all Internet access for WHOI and five other private and government organizations in the immediate area. He held several positions of leadership in information technologies at the University of Massachusetts at Amherst from 1982-1999. He holds a B.A & M.A. in Chemistry from Wesleyan University, an M.S. in Chemistry from UC Berkeley, and is a PhD. candidate in Chemistry from UC Berkeley.

Dr. Robert Green

Dr. Robert Green, Vice Chancellor for Library Services and Information Resources & Technology at the University of Massachusetts at Dartmouth.

Kathleen Beck Schrock

Kathleen Beck Schrock is the Administrator for Technology for the Nauset Public Schools on Cape Cod, MA. She has written numerous articles on technology and education and has authored four books about the Internet -- *Evaluating Internet Web Sites : An Educator's Guide, Developing Web Pages for Educators, TeacherQuests for Today's Teachers, Writing and Researching Using the Computer* and one entitled *Microsoft Publisher for Every Day of the School Year*. She also compiled a book entitled *The Technology Connection: Building a Successful Library Media Program* and is the editor of a series of books for Linworth Publishing. Kathy recently served as a member of the ISTE Board of Directors from 2004-2006. She holds a B.S. in Elementary and Special Education from Rutgers College and an M.S. in Library Science from Rutgers Graduate School of Communication, Information, and Library Science.

Sean O'Brien

Sean O'Brien is an Environmental Specialist for the Barnstable County Department of Public Health. He is the Coordinator of the Barnstable County Regional Emergency Planning Committee (BCREPC). Mr. O'Brien is also an adjunct faculty member for Cape Cod Community College where he teaches a course in Hazardous Materials Management and conducts OSHA HAZWOPER Training. He has a B.S. in Public Health from the University of Massachusetts at Amherst.

4.3 Letters of Support

The OpenCape Corporation has secured letters of support from 100% of the towns, school districts, and other organizations it believes are essential to providing resources or own facilities necessary to implement OpenCape. The letters all express a desire to participate in the development of OpenCape and an expressed openness to use available facilities. A sample of the text in the letters is at right.

> The Town of Truro would like to express its support for the Open Cape Project to provide High-speed, wireless, connectivity to the Outer Cape. We have known for some time that the risk of no communications during times of serious emergencies is very real and support Open Cape's goal of providing redundant and fail-safe communications.
>
> The ability to extend educational and library offerings via this wireless connection to CLAMS or Internet 2, for example, will vastly improve the educational experience available to Truro's children and the services available from the Truro Library.
>
> Insuring communications with emergency shelters in the event of weather, health or catastrophic events is a service our citizens must have.
>
> Finally, providing the potential ability for our citizens who live beyond the reach of traditional broad band services to connect to the internet is a desirable outcome which our residents will applaud.
>
> To assist in the development of this project and with the permission of the tower owner, The Town of Truro is willing to provide space on the Town's portion of our public safety building tower for the placement of your antenna devices and to provide access to back-up power for non-stop operations.

Entities that have submitted a letter of support are listed below:

Barnstable County	Falmouth Schools
Towns	Harwich Schools
Town of Barnstable	Marthas Vineyard Public Schools
Town of Bourne	Mashpee Schools
Town of Chatham	Nantucket Public Schools
Town of Dennis	Nauset Schools
Town of Falmouth	Plymouth Public Schools
Town of Mashpee	Provincetown Schools
Town of Provincetown	Sanwich Shools
Town of Sandwich	Truro Schools
Town of Truro	Upper Cape Regional Technical High School
Town of Yarmouth	**Other Institutions**
Town of Brewster	Barnstable County Regional Emergency Planning Committee
Town and County of Nantucket	Cape Cod Collaborative Woods Hole Oceanographic Institution
Town of Orleans	Cape Cod Community College
Town of Wellfleet	Mass Maritime Academy
Town of Eastham	Pilgrim Monument
Town of Harwich	UMASS Dartmouth
School Districts	
Barnstable Public Schools	
Bourne Public Schools	
Cape Cod Technical High School	
Chatham Public Schools	
Dennis-Yarmouth Regional Schools	